**Environmental Protection Agency 2019 Targeted Airshed Grant Program**

**EPA-OAR-OAQPS-20-01**

# Agricultural Low-Dust Nut Harvester Replacement Program

San Joaquin Valley Unified Air Pollution Control District
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**Total Project Cost:** $38,750,000.00

$20,000,000.00 of federal funding is requested.
$18,750,000.00 will be provided in the form of voluntary cost-share by Participants.

**Project Period:** Project anticipated start date: August 1, 2020
Project to end not later than: July 31, 2025

**Project Description**: The District is requesting $20,000,000.00 from the EPA to assist in the development and implementation of a program to replace agricultural off-road low-dust nut harvesters.

**Place of Performance**: San Joaquin Valley, CA – The counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the Valley portion of Kern

**PROJECT NARRATIVE WORK-PLAN**

The San Joaquin Valley has been identified as tied for the fifth most polluted area in the United States relative to the 2015 8-hour Ozone and the most polluted area relative to the 24-hour fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS) annual standard based on 2016-2018 air quality measurements. Given the fact that the Environmental Protection Agency (EPA) received funding from the 2018 Appropriations Act to reduce air pollution in the nation's areas with the highest levels of ozone or $PM_{2.5}$, the San Joaquin Valley Unified Air Pollution Control District (District), having State Implementation Plan (SIP) responsibilities for the San Joaquin Valley as a non-attainment area and being in receipt of a continuing air program grant under Sections 103 and 105 of the Federal Clean Air Act, is eligible to apply for funding from the Targeted Air Shed Grant Program. The District is requesting $20,000,000 from the EPA for the implementation of an agricultural off-road low-dust nut harvester replacement program that can be replicated in other jurisdictions across the United States.

## Section 1 – Project Summary and Approach

### A. Ongoing, Significant Emissions Reductions & Consideration of Other Activities

The District is requesting $20,000,000.00 to assist in the replacement of an estimated 328 off-road agricultural nut harvesters (harvesters) with new, low-dust harvesters that have demonstrated to reduce $PM_{2.5}$ emissions by at least 40% over conventional harvesting equipment.[1] The District will target harvesters that operate in close proximity to agricultural-based communities within the San Joaquin Valley. These communities are predominantly populated by low-income minority families, which also make up many of the environmental justice communities within the District's jurisdictional boundaries. Development and implementation of this program in the San Joaquin Valley will reduce $PM_{2.5}$ emissions associated with the agricultural industry and improve the quality of life within rural farming communities.

The District will require the purchase of low-dust nut harvesters that achieve at least 40% reduction in $PM_{2.5}$ emissions, as demonstrated by available peer-reviewed information and/or District-approved methodology. Such harvesters are used throughout the San Joaquin Valley as part of normal daily agricultural operations, which are defined by the State of California as:

> "Agricultural operations" is defined from California Air Resources Board's Regulation for in-Use Off-Road Diesel Vehicles (Title 13 CCR § 2449): and means (1) the growing or harvesting of crops from soil (including forest operations), and the raising of plants at wholesale nurseries, but not retail nurseries, or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution, or (2) agricultural crop preparation services such as packinghouses, cotton gins, nut hullers and processors, dehydrators, and feed and grain mills. Agricultural crop preparation services include only the first processing after harvest, not subsequent processing, canning, or other similar activities. For forest operations, agricultural crop preparation services include milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials."

Both old and new harvesters must reside and spend 100 percent of its operational time within the District's jurisdictional boundaries for the life of the project. The District requires that the old harvester be permanently rendered inoperable by a dismantler that is under contract with the District to ensure that emissions reductions are realized.

**Current (Old) Equipment Disposal Requirements**

1. The current equipment must be destroyed within **60 days** of being replaced, as determined from the invoiced date of the new equipment. The Participant must transfer the current equipment for permanent destruction to a District approved dismantler within **30 days** of receiving/purchasing the new equipment, as determined from the invoiced date of the new equipment.

2. The Participant is responsible for ensuring the current equipment are submitted to the dismantling facility in a timely manner to allow the dismantler ample time to properly destroy the equipment within the 60 day time frame. The Participant is responsible for coordinating the destruction efforts with the dismantler.

3. Upon transfer of the current equipment, the Participant must obtain an acceptable receipt from the dismantler as described in the program specific Payment Procedures document.

4. The District approved dismantler has **30 days** from the transfer date, as determined from the date on the receipt provided to Participant, to properly destroy the current equipment. The current equipment will be rendered permanently inoperable with the equipment's structure compromised. At a minimum, a significantly sized hole with serrated and uneven edges must be punctured in the axle housing.

5. The dismantler is required to provide the Participant a completed, signed District Certificate of Destruction form indicating the date the dismantling facility received the old equipment and its engine. The District Certificate of Destruction form must include all necessary information as required by the dismantler's agreement with the District.

Once the current equipment has been properly destroyed, the dismantler will notify the District to schedule an on-site post-inspection of the current equipment.

**The destruction of the old equipment by the Participant will render the project ineligible for funding**. Funding is not available for the salvage of any existing equipment. The existing equipment salvage value will be negotiated between the Participant and the dismantler.

The District holds the Participant and dismantler responsible to ensure the disabled equipment does not return to service. If the disabled equipment is found to be operational at any time after the post-monitoring inspection, the Participant and/or dismantler will be subject to enforcement action by the District, including repayment of incentive funds, civil penalties, and any other legal action deemed appropriate.

If approved for funding, the District Governing Board will accept the EPA funds and use the established applications and guidelines from the District's highly successful Low-Dust Nut Harvester Replacement program, which was developed by the District to assist farmers in trading in their old nut harvesters for new cleaner harvesters. The projects will be entered into a comprehensive database which will initiate the inspection of the old harvesters. The inspection process will follow the District's existing monitoring and reporting program already in place, which includes a pre-inspection, post-inspection, annual reporting, and auditing of select equipment funded. The process also includes remedies, including legal actions, to recoup funds for any projects that do not meet reporting or other contractual requirements. The pre-inspection process includes, at a minimum, visual and photographic documentation of the serial number of the harvester, verifying the information in the proposal about the existing equipment (make, model, and model year), operational status, and verification of geographic location.

Upon verification of the harvester information, the District staff will enter into an agreement with the Participant for the project. The agreement will indicate the amount of funding the Participant is to receive, the timeline for completing each phase of the project, and reporting requirements. When an agreement is executed, the Participant will be sent a project completion and implementation packet, which will include the agreement terms and conditions, a copy of the executed agreement, the payment procedures document, and a project summary. The payment procedures document includes forms and specific step-by-step instructions for the completion of the claim-for-payment packet, including a list of

all forms and documents that must be submitted as part of the claim-for-payment packet in order for the Participant to receive payment.

After the replacement harvester has been purchased and the old harvester has been permanently rendered inoperable, the Participant will complete and return the claim-for-payment packet that was provided with the executed agreement along with all required documentation as outlined in the payment procedures.

Once District staff deems the claim-for-payment packet complete, a post-inspection will be scheduled to ensure that the old equipment has been professionally dismantled and scrapped and that its associated materials are disposed of in an environmentally acceptable manner (in accordance with any applicable federal, state, or local laws, regulations, or requirements) by taking specific post-dismantling photographs and submitting certifying documentation as to the dismantling. Documentation will be available to the EPA or its designee to support ongoing program evaluations or audits as necessary. The replacement harvester will be inspected to ensure that it meets the criteria set forth in the agreement between the District and the Participant. After all information is verified, the completed claim-for-payment will be sent for payment and a check will be issued to the party named in the agreement.

All Participants will be required, by the terms of the agreement, to submit an annual report for the project. An annual report will be required each year on the anniversary of the invoice purchase date of the new harvester for five years, and will request the amount of acres the Participant operated the harvester each year. This reporting will help to ensure the emission reductions reported are true and accurate and the accountability will ensure ongoing emission reductions. All annual reports shall be retained by the District for a minimum of three years after the end of the agreement. Annual report forms will be automatically generated from the District's database and mailed to the Participants. Submitted annual reports will be processed by staff and entered into the database.

The District will audit a statistically-significant number of the projects, as well as those that fail to report annually or otherwise fail to meet agreement requirements. The audit is completed by the District staff and reviewed by a senior staff member. Projects selected, by the methods stated above, receive an audit site inspection in order to verify performance expectations as outlined in the executed agreement. Additionally, staff will verify the accuracy of all calculations and confirm that the project information contained in the hard copies of the proposal matches the database. The audit will verify that the harvester paid for is operating in the same location and meets the usage indicated on the executed agreement. This will be completed by checking the serial number of the engine, witnessing the engine operate, and checking the odometer, hour meter/usage device and fuel receipts.

Due to agricultural harvesters being unregulated, the most viable strategy for reducing emissions in this sector is incentivizing the replacement of old, outdated harvesters with new low-dust nut harvesters that have the cleanest available technology. By incentivizing the replacement of old harvesters, farmers who would normally not be interested in replacing an old harvester are now more inclined to replace it with a new low-dust harvester. New, low-dust nut harvesters reduce dust emissions produced from harvesting operations by at least 40% and are the best technology currently available in this agricultural sector. This is supported by the emission inventory for the San Joaquin Valley Air Basin (detailed below) which projects significant emission reductions from farm equipment in the future.

### B. Emissions Inventory & Progress towards Attainment

The California Air Resources Board (CARB) and San Joaquin Valley Unified Air Pollution Control District (District) have developed a comprehensive, accurate, and current emissions inventory consistent with the requirements set forth in Section 182(a)(1) of the federal Clean Air Act in order to assist in achieving projected emissions for the nonattainment area and key source categories. Emissions inventories are one of the fundamental building blocks in the development of the District's State Implementation Plan (SIP or Plan). CARB and District staff conducted a thorough review of the inventory to ensure that the emission estimates reflect accurate emission reports for point sources, and

that estimates for mobile and area-wide sources are based on the most recent models and methodologies. Staff also reviewed the growth profiles for point and area wide source categories, and updated them as necessary to ensure that the emission projections are based on data that reflect historical trends, current conditions, and recent economic and demographic forecasts.

The emission inventories for the San Joaquin Valley Air Basin can be found in Appendix B of the publicly available 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standard at https://www.valleyair.org/pmplans/documents/2018/pm-plan-adopted/B.pdf. The base year and reference year modeling for this 2018 $PM_{2.5}$ Plan is 2013, a projected base year based on the initial 2012 inventory data. CARB selected 2012 as the base year to maintain consistency across the various plans being developed in the state. This project will assist by reducing off-road emissions under the mobile sources emission category and help make progress toward attainment of the San Joaquin Valley.

Many large farms are located in the rural areas between the largest cities and small communities in the San Joaquin Valley. Interstate 5 and State Highway 99 connect the cities and cut through farmland to form two major transportation corridors that allow for the transportation of agricultural products. In addition to the diesel emissions associated with mobile agricultural equipment, agricultural operations emit large amounts of $PM_{2.5}$, largely in the form of dust produced by the usage of agricultural equipment. Farming operations, in general, produce an estimated 4,829 tons of $PM_{2.5}$ a year, which directly contributes to the overall health risks to the communities surrounding the farms. A significant contributor to these PM emissions are nut harvesting operations, which produce an estimated 31.22 pounds of $PM_{10}$ per acre harvested , which equals about 3.90 pounds of $PM_{2.5}$ per acre.[2] According to the 2017 USDA Census of Agriculture, there are approximately 1,000,000 bearing age acres of almonds in the San Joaquin Valley. Therefore, it can be estimated that almond harvesting operations alone produce approximately 1,950 tons of $PM_{2.5}$ annually. The following table shows the major agricultural related $PM_{2.5}$ sources in the San Joaquin Valley and the tons of emissions they produce each day:

| Source | $PM_{2.5}$ (tons/day) |
|---|---|
| Food and Agricultural Processing | 0.50 |
| Food and Agriculture | 0.89 |
| Farming Operations | 13.23 |
| Farm Equipment | 2.40 |
| **Total from Ag Related Emissions** | **17.02** |

Source: District's *2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards*

By replacing approximately 328 harvesters, this project will reduce exposure to directly emitted $PM_{2.5}$ in these highly vulnerable EJ communities.

### C. Innovative Emission Reductions

There are several different types of operations that are involved in the nut harvesting process. The first part of the process includes using tree shaking equipment to shake each tree in order to knock all of the nuts to the ground. Once the nuts have been shaken off the tree, nut sweeping equipment goes through each row of the orchard to sweep the nuts into a windrow so they can dry. When the nuts have been thoroughly dried, nut harvesters then go down each windrow and pick up all of the nuts off the ground and blow out all of the dust that gets picked up along with them. The shaking, sweeping and pick up operations during nut harvest produces approximately 3.47, 4.15, and 23.60 pounds of $PM_{10}$ per acre harvested, respectively.[2] This equates to approximately 0.43, 0.52, and 2.95 pounds of $PM_{2.5}$ per acre harvested, respectively.

As detailed above, the pickup operations during the nut harvesting process are responsible for approximately 75% of the $PM_{2.5}$ emissions produced during harvest. Therefore, the most practical solution to reduce $PM_{2.5}$ emissions during nut harvesting operations is to improve harvesting equipment technology[3]. This improvement is already being realized, as most of the major harvester manufacturers are producing models that significantly reduce $PM_{2.5}$ emission during pickup operations. Furthermore, it has been shown that these new, low-dust harvesters being produced by these manufacturers reduce $PM_{2.5}$ emissions by a minimum of 40%, and a total average of approximately 53%.[1]

Due to agricultural harvesters being unregulated, the most viable strategy to retire old, conventional harvesters is to incentivize the replacement of these outdated harvesters with new harvesters that have the cleanest available technology. By incentivizing the replacement of old harvesters, farmers who would normally not be interested in replacing an old harvester are now more inclined to replace it with a new, low-dust harvester. As previously stated, new, low-dust nut harvesters reduce dust emissions produced from harvesting operations by at least 40% and are the best technology currently available in this agricultural sector. Therefore, this program supports the lowest feasible emission activities for this segment of the farming industry.

To estimate the emission reductions from the proposed program, District staff performed an emission reduction calculation using data collected from several different sources (see *Section 8 - Attachments*). As a conservative measure, District staff assumed that all 328 conventional harvesters will be replaced with the new harvester model that had the lowest observed $PM_{2.5}$ reductions, which equated to approximately 40% reductions. As a result, District staff estimates that at least 183.88 tons per year of $PM_{2.5}$ will be reduced through the successful implementation of this program, with the lifetime reductions resulting in a total of at least 919.39 tons of $PM_{2.5}$ being reduced.

### D. Roles and Responsibilities

The District will serve as the program administrator for this program and oversee all phases of the project. The phases of the project will include the following:

- Processing of the harvesters selected for funding including, but not limited to, data entry into the database, pre-inspection of the harvesters, and information verification.
- Issuing agreements between the District and Participant as to the terms of the program and role of parties involved.
- Processing the Claims-for-Payment and issuing reimbursement to the Participant.
- Submitting reimbursement requests to EPA.
- Tracking annual reports to ensure program success and accuracy of the reductions reported. Meeting all Federal reporting requirements

The District has also utilized both the Citizens Advisory Committee (CAC) and Environmental Justice Advisory Group (EJAG) to discuss the issues of $PM_{2.5}$ pollution from agricultural off-road harvesters and to receive feedback on ways to make the District's grant program efficient and effective in reducing these pollutants. Continuing with the District's commitment for community involvement, this proposed program for replacing agricultural off-road harvesters was presented to the EJAG meeting and received full support. The District will continue to utilize these community partners to ensure that the program achieves the greatest emission benefits to the affected communities.

## Section 2 – Community Benefits, Engagement and Partnerships

### A. Community Benefits

This program will target harvesters that operate in close proximity to agricultural-based communities within the San Joaquin Valley. Such communities are the backbone of the San Joaquin Valley's

agricultural industry, providing farm labor necessary for crop production. These communities, however, are predominantly populated by low-income minority families, which also make up many of the environmental justice communities within the District's jurisdictional boundaries. All of the San Joaquin Valley's eight counties fall within the top 30% of Disadvantaged counties, according to the California Environmental Protection Agency's January 2017 CalEnviroScreen 3.0 map, which is a screening methodology developed to identify California communities affected by various pollution sources. Based on the latest CalEnviroScreen 3.0 model, 20 of the 30 most disadvantaged communities in California are in the San Joaquin Valley. Development and implementation of this program in the San Joaquin Valley will reduce $PM_{2.5}$ emissions associated with the agricultural industry and improve the quality of life within rural farming communities.

The enclosed air basin of the region results in very poor dispersion and exposure to $PM_{2.5}$ and ozone well above the current federal health standards. Annual exposure above the federal $PM_{2.5}$ alone has been estimated by ARB to result in 1,000 excess deaths in the San Joaquin Valley. According to the 2003 California Health Interview Survey conducted by the University of California, Los Angeles, when compared to the California state average, there is a higher incidence of asthma among children under 18 in six of the eight counties in the San Joaquin Valley and in seven of the eight counties there is a higher rate of asthma attacks among children.

Exposure to $PM_{2.5}$ leads to a wide range of health risks such as cancer, lung irritation and aggravation of asthma, blood toxicity and developmental disorders. Children are at a greater risk to the effects of diesel pollution. According to ARB, children who are exposed to higher ambient levels of ozone and $PM_{2.5}$ are more likely to be seen at emergency rooms for acute asthma symptoms. In a report by the Fresno Asthmatic Children's Environment Study (FACES), research found that children with the most exposure to PM, carbon monoxide, and nitrogen dioxide suffered up to an 8 percent reduction in their lung function compared to those with low exposure.

The off-road low-dust nut harvester replacement program will result in a decrease in the amount of $PM_{2.5}$ emissions from harvesters used in the day-to-day nut harvesting operations of farms in the San Joaquin Valley. This program will provide a significant health benefit to residents in nearby communities, as well as farm workers working with or near such harvesters. To better reach residents in the environmental justice communities described above, the District will utilize farm bureaus and associations, such as the Western Agricultural Processors Association and the Almond Board of California, in order to conduct outreach to the Participants.

### B. Community Engagement and Partnerships

To better reach residents in the environmental justice communities described above, the District will utilize farm bureaus and associations such as the Western Agricultural Processors Association and the Almond Board of California, in order to conduct outreach to the Participants.

In addition to the partners that will directly assist in implementation of the program, the District has also utilized both the CAC and EJAG to discuss the issues of $PM_{2.5}$ pollution from agricultural off-road harvesters and to receive feedback on ways to make the District's grant program more efficient and effective in reducing these pollutants. The CAC was created in 1991, for the purpose of receiving public comments related to the actions and decisions of the District. The EJAG was formed in 2007, to provide advice and guidance to the District with respect to the implementation of the Environmental Justice Strategy. This approach identifies and addresses gaps in existing programs, policies, and activities that may impede the achievement of environmental justice.

Continuing with the District's commitment for community involvement, this proposed program for replacing harvesters was first presented at the May 1, 2018 CAC meeting, upon which it received unanimous support. The District plans on continuing to utilize these community partners, to ensure that the program achieves the greatest emission benefits to the affected communities.

## Section 3 – Project Sustainability

The District has exemplified its ability to reduce emissions through its highly successful low-dust nut harvester replacement program. In 2019, 29 old, agricultural nut harvesters were replaced for a total of over $1.7 million in incentive dollars. The 29 projects resulted in just over 99 tons of $PM_{2.5}$ emissions being reduced over the lifetime of the projects. Due to the popularity of the low-dust nut harvester replacement pilot program, the District anticipates similar reductions for the anticipated five year project life in the future low-dust nut harvester replacement program. It is anticipated that this commitment will continue on for future fiscal years as funding allows.

The District will also continue to utilize both the CAC and EJAG to discuss the issues of $PM_{2.5}$ pollution from agricultural off-road harvesters and to receive feedback on ways to make the District's grant program efficient and effective in reducing these pollutants. The District has implemented a more aggressive strategy to engage local communities in its air quality emission reduction efforts. This strategy includes but is not limited to the following: contracting community based organizations on its behalf, engaging valley businesses to find potentials applicants for community clean air projects, utilizing both the District's environmental justice advisory group and the Citizen Advisory Committee, public education and outreach, providing an online portal to offer suggestions, public workshops, and providing new funding for disadvantaged communities. This commitment to receiving feedback from the local communities will allow the District to implement new strategies, activities, and approaches that are most beneficial to the region.

## Section 4 – Environmental Results –Outcomes, Outputs, and Performance Measures

### A. Expected Project Outputs and outcomes

- Outputs – To successfully implement a program to reduce health risks associated with $PM_{2.5}$ emissions in communities that are identified as EJ areas. To submit a quarterly and final report to EPA documenting progress and results.
- Outcome – Reduce a minimum of 919.39 tons of $PM_{2.5}$ per year, as calculated by the District's emission reduction calculation, and have 328 agricultural nut harvesters reduce their emission footprint.
- Performance Measures – Track and report on the number of tractors replaced and associated emissions reduction through District database and annual usage reports.

The expected output from this project is the successful implementation of a program to reduce the health risks associated with $PM_{2.5}$ emissions from agricultural off-road nut harvesters in communities that have been identified as EJ communities. The reduction in health risks will lead to an improved quality of life for these communities and help the District meet its federal air quality attainment requirements.

The minimum outcome is expected to reduce the emission footprint of 328 harvesters and reduce the following amounts of $PM_{2.5}$ emissions during the project life of the harvesters, as determined by the District's emission reduction calculations. The assumptions used to calculate the emission reductions were obtained from averages of actual agricultural off-road harvester projects that the District previously funded during the pilot program conducted in 2019 and statistically represent the typical usage of harvesters that will be funded with this program. As a result, it was assumed that the Participant will replace a harvester that harvests approximately 927 acres annually. The table below represents the calculated annual and lifetime $PM_{2.5}$ reductions that will result from each type of new, low-dust harvester that will be eligible for the program.

| Reductions Per Unit | | | | | Total Project Reductions (328 Units) |
|---|---|---|---|---|---|
| Equipment Name | Percent $PM_{2.5}$ Reduction (%) | Annual $PM_{2.5}$ Reductions (Tons) | 5-Year Lifetime $PM_{2.5}$ Reductions (Tons) | Total $PM_{2.5}$ Cost Effectiveness ($/ton) | 5-Year Lifetime $PM_{2.5}$ Reductions (Tons) |
| Exact | 41 | 0.561 | 2.803 | $20,408.03 | 919.39 |
| Flory | 51 | 0.697 | 3.487 | $16,406.45 | 1,143.63 |
| JackRabbit | 62 | 0.848 | 4.239 | $13,495.63 | 1,390.30 |
| Weiss McNair | 57 | 0.779 | 3.897 | $14,679.46 | 1,278.18 |

The expected end outcome is to reduce the amount of $PM_{2.5}$ emitted by agricultural off-road harvesters and increase the overall health of the residents of communities in close proximity to agricultural operations. It is estimated that, over the life of this project, at least 919.39 tons of $PM_{2.5}$ will be reduced as a result of 328 conventional harvesters being replaced. While total reductions are likely to be even higher, the project results are presented with the assumption that all 328 conventional harvesters will be replaced with the new harvester model that had the lowest observed reductions, as a conservative measure. These reductions will directly result in a reduction of negative health ailments associated with $PM_{2.5}$ emissions, as well as aid in educating the agricultural industry about the benefits of newer, cleaner harvesting equipment.

**Performance Measures and Performance Plan**

The District will utilize its existing grant management database, financial database and annual usage report process for tracking, measuring and reporting the program's progress towards achieving the abovementioned outcomes. These databases allow for the District to run regular reports on all information such as, but not limited to, fleet description, sub-awards granted, sub-awards paid, sub-grantee contracts, and emissions reduction. These reports will help to ensure that the actual outcomes are realized and properly reported to EPA. Participants will be contracted for a specific number of hours of operation to ensure the reported reductions are met. In addition, emissions will be tracked by reports that are submitted annually for five years by the Participant after the new harvester is put into service. Annual reports will request the Participant report on the annual acres harvested, as well as the ownership of the harvester. The District will generate the annual report forms automatically from its comprehensive database and mail them at the appropriate times.

The District will report quarterly to the EPA regarding the progress of the program. The first two quarters reported will document the progress of the document development and the RFP release. The third and subsequent quarter progress report will detail the number of tractors replaced and the estimated emission reductions that will occur. Expenditure of the grant, as well as reimbursement from EPA will also be reported with each quarterly report. The final report will contain a narrative on the achievements and lessons learned from the program.

**B. Timeline and Milestones**

Overall, the program will begin upon EPA approval of the District's "2019 Targeted Air Shed Low-Dust Nut Harvester Replacement Program", and continue up to 5 years from the opening date for the proposed project period, as detailed in the table below:

| Date | Activity |
|---|---|
| February 2020 | Submit bid |
| May 2020 | Accept award |
| August 2020 | Opening of the proposed project period |
| 4 years | Contract projects, process Participant reimbursement requests, annual usage report tracking, and EPA quarterly reporting |
| Last 6 months | Final reporting to EPA |

## Section 5 – Programmatic Capability and Past Performance

### A. Management, Completion, and Reporting Requirements

The District has worked with EPA on multiple EPA-funded assistance agreements within the last three years. The following table lists three such agreements that are similar in size, scope and relevance to the proposed application. Each agreement project is in progress or has been successfully implemented. The completed projects' milestones have been accomplished in accordance with the agreements. In all cases, the District has met all reporting requirements to date and on time, as specified in the applicable agreements, including all Quarterly Performance Reports documenting accomplishments consistent with outputs and outcomes designated in the program work plan.

| EPA-Funded Assistance Agreements | | |
|---|---|---|
| **Assistance Agreement** | **Funding Amount** | **Project Description/Progress/Status** |
| Targeted Air Shed – Tractor Replacement<br>**EM-99T71301-0** - CFDA # 66.202<br>Awarded: 05/01/2018<br>Project Period: 05/01/2018-04/30/2023 | $3,184,875.00 | Description: Replace 237 ag tractors with new T4 tractors<br>Progress: Currently obligating funds and paying reimbursement requests for new tractors purchased<br>Ongoing project. Reporting is current & provided to EPA. |
| Targeted Air Shed – Wood Burning Appliance Change-Out<br>**EM-99T54901-0 -** CFDA #66.202<br>Awarded: 04/04/2017<br>Project Period: 03/01/2017 – 02/28/2022 | $ 2,477,250.00 | Description: Change-out of open hearth fireplaces, old wood burning appliances, and old pellet burning appliances<br>Progress: Currently obligating funds and paying reimbursement requests for new burning appliances purchased<br>Ongoing project. Reporting is current & provided to EPA. |
| Targeted Air Shed – Heavy-Duty Truck Replacement<br>**EM-99T55001-0** - CFDA # 66.202<br>Awarded: 04/04/2017<br>Project Period: 03/01/2017 – 02/28/2022 | $2,477,250.00 | Description: Replacement of Class 5 - 8 on-road trucks<br>Progress: Currently obligating funds and paying reimbursement requests for new trucks purchased<br>Ongoing project. Reporting is current & provided to EPA. |

The EPA Assistance Agreements listed in the table above are but a few of the grants that the District has successfully developed, implemented and administered through state and local funding agencies, as well as other federal funding agencies. The District operates one of the largest and most well-respected voluntary incentive programs in the state. Through strong advocacy at the state and federal levels, the District has appropriated over $560 million in incentive funding in the 2019-2020 District Recommended Budget. In its twenty year history of the grants program, the District has awarded over $1.33 billion dollars in grants along with an additional $1.47 billion from recipients in the form of cost-share, reduced over 165,000 tons of emissions (NOx, PM, and VOC), and has a historical lifetime cost-effectiveness of approximately $8,060 per ton of pollutant reduced. During this time, the District has required and enforced contract usage to ensure that predicted reductions were achieved.

The District has reported on time to the State of California annually for state funding sources and both quarterly and annually for federal funding sources. At the close of all state and federal grants, final reports have been submitted in a prompt manner by the agreement deadlines.

The District grants program have underwent numerous audits over the history of the grant programs. Three separate audits with the California Bureau of State Audits, Department of Finance, and the California Air Resources Board concurred that the District had a robust incentive program that was one of the best in the state. Additionally, several of the District operating protocols were included as best management practices in the 2017 State of California Carl Moyer Guidelines.

In addition, the Sierra Nevada Air Quality Group (an environmental consulting firm) conducted an independent review and assessment of the District's budget and spending. Their findings showed that the District has exercised great stewardship of public funds. When compared to four other California air districts, the Sierra Nevada Air Quality Group found that the District has one of the most cost-effective air pollution control programs for stationary sources, one of the most efficient facility inspection programs, one of the lowest administrative overhead rates and one of the most effective public education and outreach programs despite spending less per capita.

The District received the audit results of its most recent fiscal year, which earned the best audit score possible and maintained its status as a "low-risk auditee" due to the cited strong internal controls and compliance with federal rules and regulations. The audit conducted by an independent firm, Brown Armstrong Accountancy Corporation, included a review of federally funded grant programs as required by the Single Audit Act.

The District currently has 49 staff members dedicated to the development, implementation, and ongoing administration of the District grants program. With an unprecedented increase in public funding for emission reduction projects the staff maintains a high degree of public accountability to ensure effective, efficient, and judicious expenditure of public funds. The District devotes significant resources to ensure that emission reductions are real, permanent, surplus, and quantifiable. For each grant and funding source, District staff tracks the funds, interest, and expenditures for all projects with standard accounting software such as Microsoft Navigator. For each project the District tracks all significant dates, vital project unit information, and reductions in a comprehensive database that generates and tracks annual reports to ensure that each project is achieving the reductions predicted

In addition to the grant program staff, success of the grant programs relies on other staff capabilities including finance, information and technology, outreach and communication, strategies and planning, and compliance. All District staff work closely in implementing, inspecting, monitoring, and tracking equipment and projects funded with District grants.

The District has exemplified its ability to reduce emissions through its existing and highly successful tractor replacement program. During the 18/19 fiscal year, 1,311 old, high-polluting Tier 0, Tier 1, and Tier 2 diesel agricultural tractors were replaced for a total of over $91 million in incentive dollars which resulted in 9,000 tons of emissions being reduced over the lifetime of the projects. To date, the District has contracted more than 6,200 tractors for over $320,000,000.

The District has a long history of successfully collaborating with the ARB, EPA, stakeholders, and San Joaquin Valley residents to develop and implement incentive programs that range from residential wood burning to on-road and off-road mobile equipment in order to reduce emissions in the San Joaquin Valley.

The District operates one of the largest and most well-respected voluntary incentive programs in the state. Since the District's inception in 1992, considerable funding has been expended in support of clean-air projects in the San Joaquin Valley. These projects have achieved significant emissions reductions with corresponding air quality and health benefits. The District typically requires match funding of 30% to 70% from grant recipients. To date, the District has awarded over $1.33 billion dollars in grants with an additional contribution of $1.47 billion in cost-share from recipients for a total funding investment of over

$2.8 billion. Some of the key incentive programs currently available to San Joaquin Valley residents, public agencies, and business owners through the District include:

**The Carl Moyer Program** – The Carl Moyer Program has been an on-going and reliable source of funding since 1999 to reduce the impacts of diesel emissions in the San Joaquin Valley. Through this program, the District has focused a considerable amount of funds on stationary agricultural engines as well as heavy-duty off-road equipment. To date, the District has funded over $900 million in projects and reduced over 139,000 tons of emissions with a cost effectiveness of $6,474 per ton through the Carl Moyer Program. Because of this success, the District has been approached by several neighboring air districts to either assist with the administration of their Carl Moyer Program funds or to allocate a portion of their unused funding allotment to the District as an alternative to sending those funds back to ARB. Over the past five years the District has successfully partnered with the Mojave Desert Air Quality Management District, the Antelope Valley Air Quality Management District, the Tuolumne County Air Pollution Control District, and the Great Basin Air Pollution Control District.

**Proposition 1B Goods Movement Emission Reduction Program** - The single largest source of funding for the District's incentive programs is the Proposition 1B program, which uses bond funds for a variety of state transportation priorities. The District aggressively pursued its share of Proposition 1B funding, and the Valley will receive approximately $250 million over the life of the program. The Prop 1B Program is for equipment engaged in goods movement to replace, repower and retrofit on-road heavy-duty diesel trucks, replace locomotives, replace diesel TRUs with electric TRUs and install electric TRU infrastructure. The District has receive all of its last allocations of Proposition 1B funding.

**School Bus Program** - Since 2008, the District has implemented multiple school bus programs for San Joaquin Valley school districts as well as numerous other school districts in the state. In 2010, ARB requested the Districts assistance with implementing the Lower Emission School Bus Program to replace and retrofit buses for 18 other air districts in the state. The District was successful in expending all funds for this program. In 2011, ARB, in conjunction with the California Air Pollution Control Officers Association (CAPCOA), requested the District's assistance in administering the statewide School Bus Retrofit Program on their behalf. This request was made in recognition of the District's capable and efficient administration of various grant programs. The District has also implemented its own compressed natural gas tank replacement program for school buses as well as replacement and retrofit programs with locally generated funds. To date, the District has obligated over $120 million in funding to retrofit or replace 2,880 school buses throughout the state.

**Burn Cleaner Program –** This program was developed and implemented by the District to assists residents in replacing residential wood burning devices**.** Through the use of locally-generated funding, the District commits to allocating $7,500,000, for the period of 2016 through 2020 to replace between 4,000 and 7,500 older, higher polluting residential wood burning devices in the San Joaquin Valley with cleaner devices. These funds will be expended through the District's Burn Cleaner Program and are expected to reduce up to 0.4 tpd direct $PM_{2.5}$ emissions, surplus to District Rule 4901 (Wood Burning fireplaces and Wood Burning Heaters).

To date, grant recipients along with District incentives have invested a total of $2.8 billion to purchase, replace, or retrofit thousands of pieces of equipment through all of the District's grant programs. This investment has resulted in a reduction of over 165,000 tons of NOx, VOC, and $PM_{2.5}$ emissions since 1992. Historically, states and local air agencies have not been able to obtain State Implementation Plan (SIP) credit for incentive-based emissions reduction. When given SIP credit, incentive-based emissions reduction can be used alongside regulatory-based emissions reduction to meet federal Clean Air Act (CAA) requirements, such as demonstrating attainment with federal air quality standards at a future date or demonstrating that emissions reduction meets federal SIP reasonable further progress requirements. Given the heavy investment from the public and private sectors in replacing equipment under these voluntary incentives, establishing a general framework to receive SIP credit for these emissions reduction

was critical for ensuring the continued success of these programs. Working together with EPA, ARB, and the USDA-NRCS, the District adopted Rule 9610 (State Implementation Credit for Emission Reductions Generated through Incentive Programs) on June 20, 2013. This groundbreaking, first of its kind rule, establishes the administrative mechanism through which the District and ARB take SIP credit for emissions reduced through incentives. EPA approved Rule 9610 on February 26, 2015, finding that incentive-based emission reductions are fully SIP creditable.

**B. Staff Expertise**

District staff assigned to the development, implementation, and administration of this or any grant program represent many years of experience in the environmental sciences and/or grant-administration fields. In addition to an experienced management staff, the following District staff categories will provide support in the development and administration of this program

- Air Quality Specialists,
- Accounting Technicians & Accountants,
- Air Quality Inspectors, and
- Information Technology Programmers & Analysts

Beginning with the Air Quality Specialist I position, a Bachelor's Degree from a four-year college or university with major coursework in science, engineering; regional, urban, or environmental planning; public administration; business; math; or a closely related field is required or equivalent work experience. Advancement within the Specialist classification requires progressive knowledge and experience in air quality, environmental, or related analysis, and increased supervisory responsibilities.

District staff prides themselves in excellent customer service and have made a point, over the years, to create and maintain strong working relationships with grant recipients, equipment dealers, industry groups and state and federal agencies. These relationships have provided valuable sources for networking, information requests, and support for the incentive programs provided by the District. The District provides ongoing opportunities for staff to participate in state sponsored continuing education classes in the areas of air quality management, ensuring the staff is knowledgeable in the most current technology and emission reduction strategies.

Based on a history of operating highly successful and efficient grants programs, the District is well-positioned to administer the proposed program and requested funds. The District has proactively increased staff for grant programs, as well as for finance, information technology services, and compliance to be able to handle any anticipated increased workload. The District Governing Board has committed to adding staffing resources to the development, implementation and ongoing administration of grant programs when necessary to accommodate increased program capacity.

Samir Sheikh is the Executive Director and Air Pollution Control Officer for the San Joaquin Valley Air Pollution Control District. Mr. Sheikh has nearly 20 years of experience in directing, developing, applying and administering air quality improvement programs. Mr. Sheikh was recently appointed to lead the largest air district in the state of California with some of the toughest air quality challenges in the nation.

Serving a region facing a variety of economic and public health challenges, Mr. Sheikh has led the development and implementation of some of the toughest and most innovative air pollution control strategies in the nation while working cooperatively with the regulated community to reduce administrative costs and achieve environmental and economic balance.

Mr. Sheikh has worked with a wide range of stakeholders to form a variety of successful coalitions to bring significant resources to the Valley for incentive-based emission reduction programs. Through these efforts, the San Joaquin Valley now has access to over $300 million per year in local, state and federal funds for clean air projects that expedite air quality improvement. To date, Mr. Sheikh has overseen the expenditure of over $1 billion in public/private investment in the San Joaquin Valley's clean air efforts

through voluntary programs. With a staff of over 300 air quality professionals, Mr. Sheikh has made employees' welfare and wellbeing a top priority and has instituted a number of programs to motivate and empower employees, while focusing on providing excellent customer service to the general public and the regulated community.

Todd DeYoung has over 19 years of experience administering federal, state and local incentive programs at the SJVAPCD and recently became the Director of the Strategies and Incentives department in 2019. Mr. DeYoung has been involved in all aspects of incentive program administration, including grant writing, program development, processing, contract negotiation, implementation, and auditing. Additionally, Mr. DeYoung serves on several statewide incentive program related committees including the California Air Resources Board Incentive Program Implementation Committee and recently served as the Chair of the California Air Pollution Control Officers Association Mobile Sources and Incentives Subcommittee. Mr. DeYoung holds a Bachelor of Science degree in environmental geography from California State University, Fresno.

Brian Clements has 19 years of experience at the SJVAPCD, and has most recently become one of the Grants & Incentives Program Managers. Throughout his time at the District, Mr. Clements has been involved with various other programs, including Permitting, Indirect Source Review (ISR), California Environmental Quality Act (CEQA), Air Toxics, and Emissions Inventory.

The District has operated several grant programs with state and local funding. In its twenty year history of the grants program, the District has awarded over $1.33 billion dollars in grants along with an additional $1.47 billion from recipients in the form of cost-share, reduced over 165,000 tons of emissions (NOx, PM, and VOC), and has a historical lifetime cost-effectiveness of approximately $8,060 per ton of pollutant reduced. The District currently has 49 staff members dedicated to the administration of the District's grant programs, with many years of combined experience in the environmental or grant fields.

## Section 6 – Leveraged Funding

Participants are selected through a first come first serve process. The District's low-dust nut harvester replacement pilot program provided incentives that equaled 50% of the total cost of each new harvester and has found this amount to be highly successful in encouraging farmers to participate. Each replacement harvester will cost, on average, $114,329.27 of which $57,164.63 will be paid with federal funds, and the remaining $57,164.63 will be paid by the Participant. The total project cost is estimated to be $38,750,000.00 of which the total cost-share will be $18,750,000.00.

## Section 7 – Budget

### A. Expenditure of Awarded Funding

The requested amount from EPA for personnel costs plus fringe benefits is $713,959.00 and indirect costs of $536,041.00 for a total of $1,250,000.00. The equipment to be purchased consists of 328 new harvesters at approximately $114,329.27 per unit. EPA funds will cover 50% of the total cost of the harvester totaling $18,750,000.00. The remaining $18,750,000.00 will be paid by the Participant as a cost share in the form of cash payments or financed loans. The District's estimated total project cost is $37,500,000.00 of which $20,000,000.00 is being requested from EPA. There are no travel, equipment, supply, or "other" costs budgeted.

Upon selection of the Participants and verification of the tractor information, the District staff will enter into an agreement with the Participant for the project. Milestones will be created and adhered to in order to facilitate timely distribution and expenditure of awarded grant funds. The agreement will indicate the amount of funding the Participant is to receive, the timeline for completing each phase of the project, and reporting requirements.

## B. Reasonableness of Budget and Budget Detail

The District's internal grant administration policies and procedures are designed to ensure the District recovers all allowable expenditures of federal EPA grant awards while meeting applicable federal requirements. All costs are incurred and disbursed prior to billing EPA and consistent billing methodologies are used throughout the year. Duties related to the financial management of these awards are segregated and grant processing involves multiple reviews. Management reviews and authorizes all reimbursement requests.

| The SJVUAPCD FY19 Air Shed Low Dust Nut Harvester Replacement | | | | | | |
|---|---|---|---|---|---|---|
| | | | EPA Funding | District Leveraged Funds | Harvester Owner Cost-Share | Total Project Cost |
| PERSONNEL | Rate | Hours | | | | |
| (1) Air Quality Assistant | $ 23.59 | 390 | $ 9,200.00 | | | $ 9,200.00 |
| (1) Staff Technician II | 36.63 | 585 | 21,429.00 | | | 21,429.00 |
| (1) Air Quality Specialist II | 40.41 | 4000 | 161,640.00 | | | 161,640.00 |
| (1) Senior Air Quality Specialist | 44.54 | 1605 | 71,487.00 | | | 71,487.00 |
| (1) Supervising Air Quality Specialist | 50.34 | 1450 | 72,993.00 | | | 72,993.00 |
| (1) Senior AQ Instrument Technician | 40.41 | 160 | 6,466.00 | | | 6,466.00 |
| (1) Accounting Assistant II | 23.60 | 440 | 10,384.00 | | | 10,384.00 |
| (1) Accounting Technician II | 30.12 | 550 | 16,566.00 | | | 16,566.00 |
| (1) Accountant II | 40.41 | 275 | 11,113.00 | | | 11,113.00 |
| (1) Senior Accountant | 44.54 | 550 | 24,497.00 | | | 24,497.00 |
| (1) Supervising Accountant | 50.34 | 165 | 8,306.00 | | | 8,306.00 |
| (1) Air Quality Field Assistant | 27.99 | 440 | 12,316.00 | | | 12,316.00 |
| (1) Air Quality Inspector II | 40.41 | 170 | 6,862.00 | | | 6,862.00 |
| (1) Programmer/Analyst II | 46.78 | 25 | 1,170.00 | | | 1,170.00 |
| (1) Senior Programmer Analyst | 51.58 | 25 | 1,290.00 | | | 1,290.00 |
| TOTAL PERSONNEL | | | $ 435,719.00 | | | $ 435,719.00 |
| | | | | | | |
| FRINGE BENEFITS | | | | | | |
| (1) Air Quality Assistant | $ 18.46 | 390 | $ 7,199.00 | | | $ 7,199.00 |
| (1) Staff Technician II | 23.84 | 585 | 13,946.00 | | | 13,946.00 |
| (1) Air Quality Specialist II | 25.56 | 4000 | 102,240.00 | | | 102,240.00 |
| (1) Senior Air Quality Specialist | 27.44 | 1605 | 44,041.00 | | | 44,041.00 |
| (1) Supervising Air Quality Specialist | 31.10 | 1450 | 45,095.00 | | | 45,095.00 |
| (1) Senior AQ Instrument Technician | 26.22 | 160 | 4,195.00 | | | 4,195.00 |
| (1) Accounting Assistant II | 17.92 | 440 | 7,885.00 | | | 7,885.00 |
| (1) Accounting Technician II | 20.89 | 550 | 11,490.00 | | | 11,490.00 |
| (1) Accountant II | 25.56 | 275 | 7,029.00 | | | 7,029.00 |
| (1) Senior Accountant | 27.44 | 550 | 15,092.00 | | | 15,092.00 |
| (1) Supervising Accountant | 31.10 | 165 | 5,132.00 | | | 5,132.00 |
| (1) Air Quality Field Assistant | 20.38 | 440 | 8,967.00 | | | 8,967.00 |
| (1) Air Quality Inspector II | 26.22 | 170 | 4,452.00 | | | 4,452.00 |
| (1) Programmer/Analyst II | 28.46 | 25 | 711.00 | | | 711.00 |
| (1) Senior Programmer Analyst | 30.63 | 25 | 766.00 | | | 766.00 |
| TOTAL FRINGE BENEFITS | | | $ 278,240.00 | | | $ 278,240.00 |
| | | | | | | |
| OTHER | | | | | | |
| Low Dust Nut Harvesters 328 @ $114,329.27 | | | $ 18,750,000.00 | $ - | $ 18,750,000.00 | $ 37,500,000.00 |
| TOTAL OTHER | | | $ 18,750,000.00 | $ - | $ 18,750,000.00 | $ 37,500,000.00 |
| | | | | | | |
| TOTAL DIRECT | | | $ 19,463,959.00 | $ - | $ 18,750,000.00 | $ 38,213,959.00 |
| INDIRECT CHARGES | | | | | | |
| Overhead Rate = 75.08% of Personal + Fringe | | | $ 536,041.00 | | | $ 536,041.00 |
| TOTAL INDIRECT | | | $ 536,041.00 | | | $ 536,041.00 |
| | | | | | | |
| TOTAL FUNDING | | | $ 20,000,000.00 | $ - | $ 18,750,000.00 | $ 38,750,000.00 |